

Text-based Emotion Detection for Monitoring Criminals Behavior and Activities

Md. Main Uddin Hasan
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
md.main.uddin.hasan@g.bracu.ac.bd

Most. Mahjabin
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
most.mahjabin@g.bracu.ac.bd

Rafa Siddiqua
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
rafa.siddiqua@g.bracu.ac.bd

Rakeen Ashraf Chowdhury
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
rakeen.ashraf.chowdhury@g.bracu.ac.bd

Tamanna Kaiser
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
tamanna.kaiser@g.bracu.ac.bd

Majwega Jackson
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
majwega.jackson@g.bracu.ac.bd

Shegufta Mehzabin
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
shegufta.mehzabin@g.bracu.ac.bd

Tanzim Ahmed
Dept. of Computer Science
and Engineering
BRAC University
Dhaka, Bangladesh
tanzim.ahmed1@g.bracu.ac.bd

Abstract – AI has contributed fundamentally to giving compelling answers for significant human and cultural issues under different fields including common language handling (NLP), which utilizes computational and semantics methods to help PCs comprehend and now and again produce human dialects as writings and discourse or voice. Conspicuous commitments in the field of NLP under dynamic exploration incorporate interpretation frameworks, data recovery (IR), questions and replying (question and answer) frameworks, text synopsis frameworks, assumption investigation (SA) etc. Fanning from the field of SA whose center expectation is to examine human language by removing feelings, thoughts, and musings through the task of polarities either regrettable, good, or nonpartisan is the subfield of feeling discovery (ED), which looks to extricate better grained feelings, for example, cheerful, pitiful, furious, fear, anxious etc. from human dialects instead of coarse-grained and general extremity tasks in SA. ED, accordingly, is the synergistic relationship of feelings additionally called influences and technology and gets its substance from applying feeling characterized innovation to various territories to give fine-grained dynamic.

Index Terms – AI, Criminal activity NLP, Sentiment analysis, Text mining.

I. INTRODUCTION

Natural language processing is one of the key innovations of artificial intelligence. The rapid growth of the Internet and easier availability to everyone, it's used by most people. And it generates a huge amount of data. Nowadays people are very active in their social media they try to describe their feelings or any kind of information on social media using their different kinds of posts. So now it is very popular to know about people sentiment and observed their activities. Because it is very helpful for a government to protect any kind of criminal activity or for a company, it's easy to know about their product review so it is a blessing for everyone just by processing the natural language and generate some idea from it. So now it is a very hot topic in artificial intelligence. One of the concepts of natural language processing is sentiment analysis. It is mainly for knowing people's behavior and how they react.

Previously the natural language processing is used to detect criminal activity. But it is not used to know about the criminal's behavior, we tried to apply it to criminals' behavior and want to know about how they feel after committed the crime. we believe that all people are born as innocent. We mainly applied a model on criminals' behavior and try to analyze their sentiment and how they felt for the victim or if they feel any kind of guilty for this kind of crime. And it is helpful for their

rehabilitation process and also avoids this kind of crime later.

II. RELATED WORKS

Sentiment Analysis applies Regular Language Handling (NLP) devices and text examination to recognize, and examination sentiments inside messages. Utilizing feeling investigation calculations, PCs can recognize good, negative or unbiased feelings through vocabulary based or AI approach. In a distorted definition, vocabulary based calculation utilizes a word reference based methodology that is uses to figure a words enthusiastic extremity and slant strength (Taboada, Brooke, Tofiloski, Voll, and Stede, 2011). AI calculation is based off a model dataset of words that have positive, unbiased and negative extremity (Rathee, 2018)

NLP and AI have been utilized inside the setting of distinguishing the kind of feelings in through messages. In this part, we give a survey of writing on late feeling identification concentrates with center around; Feeling location in online wellbeing networks, Feeling based Lexical models, Profound learning and AI, and Headings for General wellbeing dynamic utilizing web-based media or related content investigation.

III. METHODOLOGY

A. Concept

Understanding one's emotion while texting or monitoring one's text conversation, it is always important to understand one's emotion. Based on the emotion we may have the probability of that person's activity. Its easy to detect when it's a voice call or record. But Not very easy, when its in text form. Text may have so many characters, such as alphabets words numbers symbol, punctuations etc. or it can be in crypto form. Our Text based emotion system will sort and search and will analysis those texts and if necessary, it will run some crypto algorithm, if the text contains any secret message. System will have some pre readymade algorithms to understand the words and when people use these types of words one after another and what is the keywords. For example, If I say "Its very pain and harmful for me" our system will focus on "me" "pain" and "harmful" and then "very" and will give a percentage of my emotional elements and will give an

average statement like "He is sad or fear. Elements of emotion such as Happy, Sad, Surprise, Shock, fear, anger, disgust etc. Based of probability our system will try to detect what is the emotion of a criminal like is he in fear or anger. And Based on these percentage we will try to analysis is that criminal is up to something or not or his\her recent activity. Feeling location examination through data recovery and NLP as a system have been utilized to investigate enormous content corpora of online wellbeing local area correspondences in psychiatry, dentistry, malignant growth and wellbeing and wellness. For instance, a specialized instrument was acquainted for psychological wellness care with comprehend directing substance dependent on feeling discovery and normal language preparing utilizing visit associates. Like the proposed approach in our work, an examination broke down messages in on the web or text to comprehend the most noticeable feelings in any sort of peril and proposed a computational model that can abuse the semantic data from the content information. By using this we also can prevent criminals and crime.

B. Proposed Model

We proposed to utilize more extensive kinds of feelings utilizing Plutchik's model that contains eight feeling to dissect the notion appropriately since, in such a case that we can identify the correct feeling one can take the correct choice. Psychologist Robert Plutchik created the Plutchik Model shown above. It shows there are 8 basic emotions: joy, trust, fear, surprise, sadness, anticipation, anger, and disgust. Plutchik's wheel of emotions organizes these 8 basic emotions based on the physiological purpose of each.

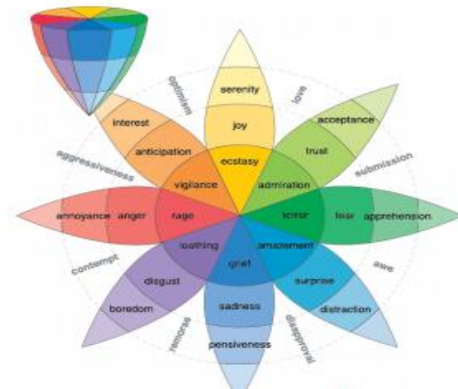


Fig1 : Plutchik Model

The eight areas are intended to demonstrate that there are eight essential feelings: outrage, expectation, happiness, trust, dread, shock, misery and disdain.

Contrary energies: Every essential feeling has a total inverse. These depend on the physiological response every feeling makes in creatures

Happiness is something contrary to trouble. Physiology: Interface versus pull out

Dread is something contrary to outrage. Physiology: Get little and conceal versus get huge and uproarious

Expectation is something contrary to amaze.

Physiology: Look at intently versus bounce back

Disdain is something contrary to trust. Physiology: Reject versus embrace

IV. CHALLENGES

We can also use Mechanical Turk (MT). As it is a generally minimal expense, exceptionally adaptable technique for performing assignments that require human knowledge. As of late, many have gone to Mechanical Turk to gather marks for various NLP undertakings: word sense disambiguation, text based entailment, transient requesting of occasions, question-and-answer, machine interpretation, subject demonstrating and that's only the tip of the iceberg. It is low in cost, fast and scalable. It also help the ratio of negative emotions in a Text. Ex:

One of the biggest challenges in determining emotion is the context-dependence of emotions within text. A phrase can have element of *anger* without using the word "anger" or any of its synonyms. For example, the phrase "Shut up!" Another challenge is the difficulty that other components of NLP are facing, such as word-sense disambiguation and co-reference resolution. It is difficult to anticipate the success rate of machine learning approach without first trying.

V. CONCLUSION

.In this work, we mainly try to describe the emotion analysis of criminals and try to detect the criminal sentiment. Here we proposed a model which mainly used for sentiment analysis of criminals and this model is mainly an extended version of some previous model which is called Mechanical Turk. We try to describe clearly our model and We also give a clear idea about mainly this model works. In the future, we want to work on that and try to extend this idea.

REFERENCES

- [1] Taboada, M., Brooke, J., Tofiloski, M., Voll, K., & Stede, M. (2011). *et al.* Lexicon-based methods for sentiment analysis. *Computational Linguistics*, 37(2), 267-307 doi:10.1162/COLI_a_00049.
- [2] Johnsen, J.-A.K., *et al.* Differences in Emotional and Pain-Related Language in Tweets About Dentists and Medical Doctors: Text Analysis of Twitter Content. *JMIR public health and surveillance*, 2019. 5(1): p. e10432.Google Scholar
- [3] Callison-Burch, Chris. "Fast, cheap, and creative: evaluating translation quality using Amazon's Mechanical Turk." *Proceedings of the 2009 Conference on Empirical Methods in Natural Language Processing: Volume 1-Volume 1*. Association for Computational Linguistics, 2009
- [4] Callison-Burch, Chris, and Mark Dredze. "Creating speech and language data with Amazon's Mechanical Turk." *Proceedings of the NAACL HLT 2010 Workshop on Creating Speech and Language Data with Amazon's Mechanical Turk*. Association for Computational Linguistics, 2010.